MANAGING ECO-DESIGN OF INDUSTRIAL GOODS AND CONSUMERS' PROTECTION NEXUS

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Abstract
In the context of the significant changes that influence the contemporary universe, the consumer keeps her/his position as the main and central axis of all the activities whose target is to meet, as thoroughly as possible, the consumer's wishes, exigencies, preferences and needs. This satisfaction stands for the essence of the achieved economic actions. On the other hand, the consumer has become prudent, exigent and determined while selecting the goods and this is due to the fact that s/he has acquired extensive knowledge on the issue that allows her/him to use an adequate competence level to be able to set the directions that mostly fit her/his interests.
The modern product's success on the market is triggered by the simultaneous use (which means conception and distribution) of a wide range of knowledge, methods and managerial tools, not only in a systemic and systematic approach, but also in a global one, too. The eco-design, seen as a managerial tool, influences a surprisingly big number of company parameters, starting from its public particularities and image, then, getting through the practical aspects of the offered product range, the impact and the efficiency of the distribution means, and continuing with the methods used to communicate with customers and with their own employees.
The present paper will refer not only to the eco- design applied to the concrete products destined to the individual clients or to the end users from the consumption markets, but to the necessity of applying an eco-design strategy means developing innovative products with a high effectiveness, which promote sustainable consumption and environmental protection. To this purpose, an ecological product could be a social, educational factor, and eco-design should be a pro-active approach on its way to legal complacency and consumer protection.

Keywords: consumer protection, eco-design management, ecological branding, education and information of consumers

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Introduction

Within the present economic background, marked by the phenomenon worldwide process, by the awareness of the existence of the interdependence between environment and progress, we have become part of the increase of the society's exigencies regarding the environment protection, exigencies made known by more and more severe regulations. Forced by these regulations, and taking into account the greater significance of the ecological criteria when it comes to classifying products and services, on the market, under the circumstances of a diversified and extremely dynamic offer, more and more organizations are preoccupied with improving their own environment performances. To this purpose, there are organizations that allocate significant amounts of their investment funds, which favors the research-development approach of those environmental friendly processes and products.

The design is placed in a paradoxical situation: it evolves towards a new model, and, in a particular pertinent way, it creates a bridge between culture and technique, art and values, and acting, at the same time, creatively, thus becoming able to come up with new, science, economics, and human behavior, and taking responsibility of quality related full of sense, estimations of the future.

Reality is complex and evolutionary, and therefore, its approach should be global; on the other hand, the design activity should be able to quickly cope with these changes. If design implies contribution to re-inventing the world, its feed-back should promptly and eagerly to accept the following changes: quality and environment philosophy natural resource limitation; cultural identity; bio- technology promotion demographic lack of balance. Over the last decades, designers, as well as the entire society have changed the perception on design very much; if we accept the big influence that design has on the quality of life, the design parameters become different in the respect of blending its aesthetic meaning with the ethical one.

Nowadays, the quality philosophy replaces the quality myth. It is obviously not or the product and service quality that is brought into discussion here, but also the relationship quality with the objects, the quality of the personnel, their intellectual and cultural life, and the environment quality, as well. After the period of the "at any price" consumption, there appears a new form of moralizing the consumption, such as, the concern that really exists for the long life products, the trans-generation ones, or for the multifunctional products, as well as the permanent concern directed towards putting the natural resources to the best use.

1. Managerial implications of eco-design

Any new product designing and producing is, for many companies, an activity that slows down the natural course of the activities in progress; this is the reason why designers are considered as agents who bring along changes. Product development has been approached as "a crossing" where there meeting resources (resource management, environment protection, offal management); design (product and process innovation, environmental technology); marketing (consumer's behavior, consumption request; eco-marketing), and legislation (product liability, consumer's protection, quality check-up).

The traditional approach, as far as environment protection is concerned, takes into account pollution concerns and waste management, but these strategies concern only the prevention or minimization of the potential impact on the environment, without taking into consideration products' design. Eco-design is addressed to the first stage in the product development. The new concept aims at eliminating the impact on the environment from the product and from the production process. Generally speaking, almost approximately 80% of the product's environment impact can be detected in the design stage; as far as the costs along the life cycle are concerned, the situation is pretty much the same. Under these circumstances, it is of great importance to take into account the economic and the environment issues from the very early stage of product design.

The eco-design practice has in view that the product improvement should determine, within a life cycle, the decrease of the consumption of energy, offal, radiation and toxins. The basic idea in eco-design is the reduction of the impact on the environment along the life cycle of the products by means of an improved design of the product.

A company cannot be alone in this chain: purchasing raw materials, producing components, assembling the product, distribution and sale, the use of the product, repair and reuse, disuse, material recycling, final elimination. However, the existence of the relation between the suppliers and the clients, the consumers and the recyclers means that any company has an indirect influence and a certain responsibility for the environment impact along the life cycle.

Still, it is compulsory that the durable product design should equal and include "ecological service" concepts such as: product associated use, environmental leasing, and mutually advantageous use. The moral and social aspects that occur during the durable design process should not be left aside, either.

The durable development observes the long term reconciliation between the need to produce and consume, on the one hand, and the need to protect a life favoring environment, on the other hand. This philosophy marks, at the same time, the passage from corrective to preventive actions.

In order to satisfy the people's requests and needs, it has become necessary to cut down, to the minimum, the limits imposed by the resources, the technology and the social organization levels. Other measures include: the achievement of de-materialized goods, the ecological service oriented towards efficiency, economy and the resource distribution re-evaluation. The advantage of the immaterial goods consists in the fact that, it is virtually possible that the request increase to the utmost limit without negatively affecting the environment.

In the context of these evolutions, the eco-design managerial implications have in view:

- to define the eco-design policy and include it within the company's environmental management;
- to choose between implementing the eco-design activity, with the help of own detained resources, or carrying it out with the help of external consultant services;
- to set the provided services by means of the eco-design activity:
  - communication approach design (both inside the company and on the market);

- commercial sets (inside architecture, goods display);

- product selection and design; packing and related graphics, included;

- to meet the needs imposed by fashion.

- to limit the acquisition risks and the clients' uncertainties towards the product quality by setting the attributions requested by the client (obviously depending on experience and trust);

- to issue the specifications of eco-design objectives by setting the problem background, the used methods and the volume of the necessary effort, the execution graphs and the budgets, so that it would be possible to evaluate the necessary time consumption, and, implicitly, the costs. It is only afterwards that the domains which need critical decisions should be decided upon, as well;

- to set the mutual "visual language", meant to coordinate the designer's actions and issue a method to be made use of for the visual interpretation of the marketing qualitative data which define different opportunities for the concerned segments regarding the goods aspect and the consumer's life style;

- to set the basic concepts which need to be applied with reference to the product design depending on the program nature (at this step, there might occur various decision issues which might lead to a repeated revision of ideas and directions), and, eventually, to a preliminary evaluation of costs;

- to carry out, in a detailed manner, the eco-design process by means of:

- refining the exterior aspects of the product, namely, those aspects which directly refer to the client;

- product drawing up, both as its general form, and, equally, in detail;

- harmonization of the technological rigor to the eco-design requests (resource - request balance, cost limitation, estimated profit);

- product's three-dimensional representation; feasibility and industrialization studies by means of calculating the cost and evaluating the technical possibilities.

- to achieve the execution and prototype projects, often abiding by the final external finishing parameters with a view to test the market, and, further on, decide on the price, even previous to initiating the production process;

- to start the new product execution, supervise, and have a round the clock evaluation of the quality during the production process;

- to pack, mark and label, ecologically, the new products, analyzed from the point of view of costs and profits, and also, from the point of view of the advantages offered to the client;

- to set the distribution and sale channels, the post-sale services that could trigger the increase of the product value, could influence and consolidate the client's decision to purchase it.

2. Individual consumer – engine of eco-design

The responsibility for the environment is tightly connected with creativity and innovation. It leads to an identity and a greater visibility on the market. The selection of suppliers by the producers of original equipment is done according to the environment profile.

Respecting the regulations means compliance, but it also involves a certain degree of bureaucracy that reduces the added value. Discovering the benefits associated to the strategies of a „ green" product is the first step towards developing a pro-active strategy and overcoming a passive, reactive approach.

It is said that usually environment strategies are expensive, but, in many cases, eco-design leads to savings; for example we can mention the reduction of the consumption of raw materials and of waste during the production process of the products with a low consumption of energy that is a real benefit for the producers, not to mention the decrease of the internal risk and the motivation of the employees (Schischke & Hageluken, 2005). Care for the community, motivational benefits for employees and customers contribute to increasing profitability and provide a positive image for the company as a stable trading partner.

In the UE countries there is an almost untapped market for „green" products and services. The domestic demand for such products contrasts with very low supply, and with lack of distribution channels and alternative linkages between sustainable producers and consumers. Sustainable consumption and production are good both for consumers and business. At the same time, it is an obligation for governments (Huba, 1998).

In accordance with the United Nations guidelines for consumer protection (United Nations Resolution 1999/7, Economic and Social Council, 2003) governments, in partnership with business and relevant organizations of civil society, there should be developed and implemented strategies that promote sustainable consumption through a mix of policies that could include: regulations; economic and social instruments; sectoral policies in such areas of land use, transport, energy and housing; information programmes to raise awareness of the impact consumption patterns; removal of subsidies that promote unsustainable patterns of consumption and production; and promotion of sector-specific environmental-management best practices.

For some consumers, aware of the importance of environment protection and of the fact that the green products are in many cases more effective than the other products, we can say the „green sells better". There are many ecological labels that certify and communicate the ecological properties of the products. The ecologically designed products are effective, safer, more durable and of a higher quality.

Beside of these arguments which sustain relationships between ecodesign-management – consumer's protection and sustainable development can be mentioned and other arguments:

- sustainable consumption and production assure a better quality of life;
- sustainable consumption diminishes the multiple health risks, meaning a preventive health care, it saves money, time and allows for a longer life in good health;
- sustainable consumption and production allow better use of a households resources;

- sustainable consumption and production allow the saving of resources for increased welfare within local communities;

- the framework of sustainable consumption and production provides the „instruments" for preventive environmental policies;

- an increased social responsibility of companies.

In order to encourage sustainable consumption and production there was initiated Decade for Education for Sustainable Development (DESD, 2005-2014), coordinated by UNESCO. The overall goal of the DESD is to integrate the values inherent in sustainable development into all aspects of learning to encourage changes in behavior. These changes allow for a more sustainable and just society for all. The DESD recognizes that achieving more sustainable consumption patterns requires both business practices and government policies that broaden the range of choices, and guarantee clear and reliable information open to consumers to make environmentally and ethically sound decisions (United Nations Environment Programme, 2008).

Interactive policy-making based on sectoral partnerships is an opportunity to bring together the expertise of governmental and NGO bodies in developing sustainable alternatives to dominant consumption patterns. At the same time due to increased awareness of environment related issue, individual consumers have become the main engine of eco-design.

Preventing pollution has become a major concern; this is why it is highly appreciated to be environment-friendly. There is a big number of green/ ecological labels for different groups of products in the European countries. Ever since the end of 2002, around ten thousand products had one of the national or regional ecological labels, or the European flower. But the ecological/green label is not important only for the individual consumers; it is included among the selection criteria for public acquisitions, where the ecological properties of the products play a very important role. Price, functionality and service are primordial for the purchasing decision, but „green" can be an additional argument in favour of some products. According to a study carried out by the Federal German Agency for Environment, 10% of the Germans have totally agreed with this, and other 53% were ready to pay more. This does not mean that the eco-designed products are more expensive; they can be even more inexpensive than the standard products, especially when the costs of the life cycle are taken into account (Figure no.1).

The eco-design strategy could not be conceived without observing the regulations which have in view the implementation, at the macro-economic level, of the ecological product promotion system, for example, by ecological marking, and without observing the national, district and international models of the environmental management, for example, the model promoted by the ISO 14000 series international norms.

It is mandatory to respect the legal framework, and that involves efforts in the area of environment protection. Nevertheless, legislation should not be the only motivation of the "green" activities, because legislation does not lead to innovative strategies by itself.

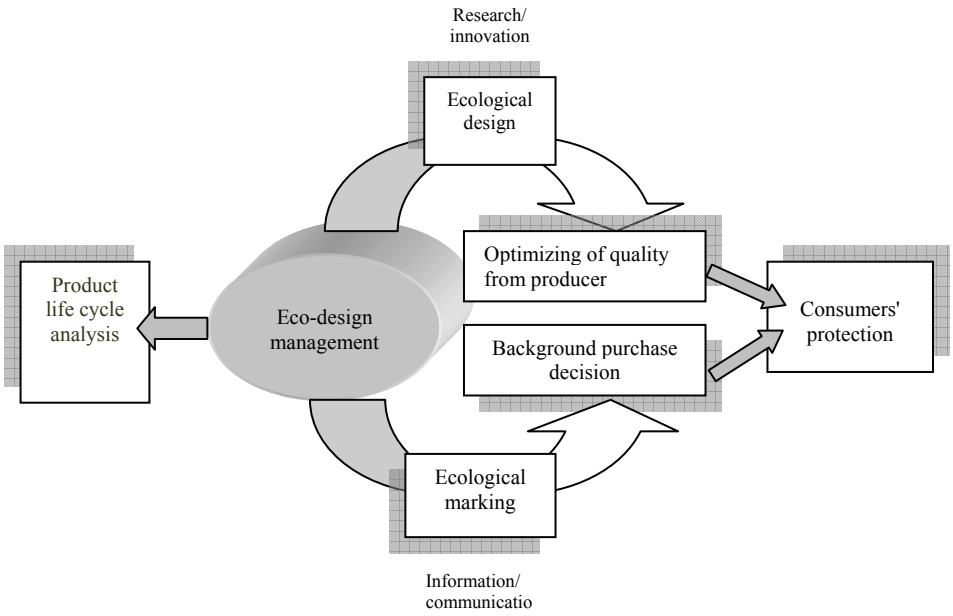

Figure no. 1: The objectives of eco-design management

The ISO 14000 series refers, mainly, to the ecological marking and to the product life cycle analysis. The norms referring to the ecological marking are used by the supplier in order to demonstrate the ecological characteristics of products and services. The product life cycle analysis shall stand for the evaluation means of these characteristics, taking into account the possible consequences on the environment in each of the steps of the cycle: from conceiving to drawing up; passing through the raw material and energy supply, and, then, through the production, distribution, use and post-use steps.

The second group of standards belonging to the ISO 14000 series is meant to help keep under control the impact of products and services on the environment. They offer, to an equal extent, tools to help optimize the decisions of an organization, namely, a higher quality for their products and services, as well the decisions to be made by the people who are responsible for the environment policy, at the macro-economic level.

3. Case study - the electronic and electro-technical industries

The European Union has created the legal framework for the environment protection, with direct reference to the electronic and electro-technical industry. The most important legal documents refer to: "Integrated Product Policy"; "Eco Design of Energy-using Products" directive; "Electrical Waste and Electronic Equipment" directive; "Restriction of the use of certain Hazardous Substances" directive.

The directives establish the detailed requirements and the "Integrated Product Policy" establishes the framework and the philosophy of the European legislation concerning the product aspects that are of environmental interest. The electronic industry is a major

component of the European economy and of the small and medium enterprises in this domain, engine of innovation and new ideas; but this area is tightly linked with the environment issues:

- the household and office appliances use more than 25% of the total final consumption;
- electronic products' innovation, development and availability are associated with their quick disposal and replacement;
- the components of products that come from a wide variety of sources from the entire world;
- the complexity of the electronic and electrical devices means at the same time a wide variety of materials, some specific to this domain, others dangerous for the environment and health.

On the other hand, the products coming from these branches of activity also present a great 'green" potential, offering a big potential for durable development: the miniature-like process, which means a reduced consumption of materials for the same function, more information concentrated on a reduced physical support, promotion via the Internet (that offers education, equal chances and equal participation), an increased effectiveness through means of the automatization of the processes and machines.

These are the reasons why the branches of electronics and electro-techniques play an important role in environment protection.

An evaluation of the life cycle of the products helps to set priorities exactly in order to optimize eco-design. In accordance with the United Nations guidelines for consumer protection, companies should be encouraged to promote the eco-design, development and use of products/services that are safe and energy and resource efficient, considering their full life-cycle impacts.

Taking personal computers as example, their production (including purchase and transportation of the raw materials) consumes almost 500kW of primary energy. The average life cycle is 4 years and this leads to a total annual average consumption 1.600 kWh of primary energy. Nowadays a great part of the materials can be recovered. Reusing them instead of new materials leads to an approximate 70 kWh energy saving. These figures demonstrate that it is very important to improve recycling, but is also important to improve the production process. And the absolute priority must be the use stage, where there is a higher consumption of energy; educating the consumers as regards effective consumption must be doubled by an increase in effectiveness in use by means of hard and soft improvement (Schischke & Hageluken, 2005). The 2009/125/CE Directive of the European Parliament[1] represents another example emphasizing the EU concern for the consumers' and environmental protection. This creates a new background favorable for stating the conditions necessary for the ecological design to be applied for the energetic impact products. The present adjustments allow extension of applying the above mentioned directive upon all the similar produces. This is a condition for reaching the highest level in environmental protection; the consequence would be beneficial both for the consumers and

[1] Published in UE Oficial Journal no. L 285, 31 oct. 2009.

other final users. The directive must be applied before Nov the 20th 2010 (http://www.juridice.ro/90180/noile-cerinte-europene-in-domeniul-eco-design.html).

4. Ecological branding - a effective tool in consumer's education and information

Concern for the improvement of the environment quality is the core of the durable development programmes, both in the developed countries and on regional and international level.

Although ecology-related practices have evolved at the same time with social communication, it could be seen that they were not often influenced by education, but by the socio-economic factors.

Starting with the definition of social communication (a set of rules, implicit or explicit, that are predictable among the participants in the same culture – Winkin, 1990), we can say that, as far as ecology is concerned, social communication is made up of agreed conditions that reflect upon the quality of the environment and, especially upon the living style. Ecological branding can be considered such a convention, as it is accepted as a social necessity, guaranteeing the consumers a correct behaviour, thus focusing on the improvement of the environment quality, and implicitly, the consumers' health.

Ecological branding must be conceived as an intervention that focuses on changing social communication as far as consumer behaviour is concerned, in the stages of purchase, consumption and post-consumption of the products in order to improve the quality of the environment. In order to put interventions into practice it is necessary to respect the principles of action (Andrew and Beghin, 1993) based on the following grounds:

- Equity: favoring a better social justice;
- Participation: association in the consumers' decision-making processes;
- Integrity: communication must be a support activity in the processes of development, oriented towards the improvement of the environment quality;
- Rationality: interventions must be based on a profound analysis of the environment problems (Figure no.2).

But the mere ecological branding cannot be effective for the vast mass of consumers, if it is not accompanied by information and education programmes for them, so that they are able to understand and interpret correctly the message on the label and to use it for themselves, when they try to make decisions in choosing the product.

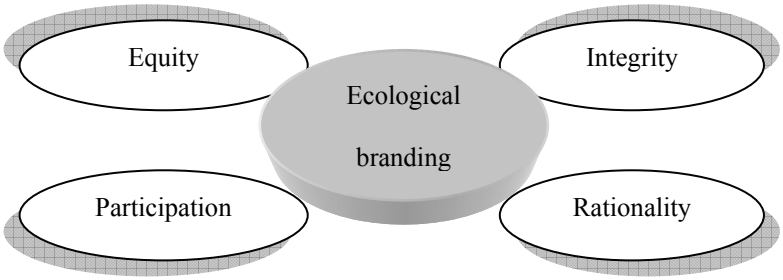

Figure no. 2: The grounds of ecological branding

Ecological branding must be included within a system of actions carried out and controlled by the government and responsible institutions that concern the producers, the marketers and the consumers.

The consumers have the right to be informed about the products that they purchase, about their quality and safety.

The producers, the marketers, the governments and the non-governmental organizations have a very important role in ensuring the quality of the products, so that they come up to the consumers' expectations and needs in terms of safety and quality.

The consumers must be able to express the points of view as regards the drawing up of the regulations concerning ecological branding, as they are the real beneficiaries of these pieces of information. In order to achieve this it essential that industry and consumers communicate.

Benefiting from much education and information, the consumer can take advantage of all the pluses offered by the ecological branding of the products. Only in these conditions can ecological branding become a real and effective instrument of the social policy and practice with a view to consumer protection.

Conclusions

Eco-design should be looked at as an assembly managerial tool whose adequate use and operation could influence the company's general activity. Eco-design should be represented, independently, at the highest levels of the board directors, just like the other domains of the main activity.

Eco-design consists of integrating the environment issues in the design stage, taking into account the entire life cycle of the product starting with the purchase of the raw materials up to the disposal of the product.

According to this paper "Eco"-means at the same time economy and ecology. Eco-design implies the putting into practice the designers' creative and integrating aptitudes. Designers are looked at as promoters of change, of the integration of the environment management system, and of the pollution preventing policy. Eco-design will continue maintaining its actual position, or it will try to get to a more important position within the company's management, taking into account the environment policy, promoting the principle of the legal request awareness with reference to environment, requests to be applied to products, services and technological processes. Eco-design implies and needs the allocation of significant resources, but the success of the products on the market can bring along important financial performances (see Philips, Electrolux), not to mention the social ones and especially those related to the environment protection. Eco-design affects the entire range of a company's departments and activities, especially research-development, production, use, reflecting the company's real situation as related to nature, the dimensions and impact of activities, of products and of their services on the environment.

Eco-design is, therefore, an extremely important domain no matter the range of activities developed by a company, influencing all the traditional, economics related functions, and acting as an interface between the company and its markets.

Enterprises can adopt in a pro-active manner the requirements that come not only from the legislation, but also form the clients, the market, etc. Besides, the ones that have an energetic and pro-active approach as regards eco-design will open the door towards creative innovation more easily.

Everybody is convinced that the affective and "ecological" products are the correct answer to a possible resource exhaustion. The question of exhausting resources should not be regarded just as a substitution of the material with the immaterial structure. An important aspect is switching objects into services. Appreciating that the physical production will go on into the near future, design will have to start from the details to create specific materials and technologies within the product; design will also have to consider both its use and reuse being obliged to totally agree with the idea of eliminating useless shapes and devices.

In this context, the processes of producing and consuming are perceived as a result of the activities, mostly aiming their significance instead of functional mechanism or the real structure of the material.

The non-existence of eco-design will trigger the narrowing down of the chance to have new products whose ecological parameters be placed next to the ones related to health, ergonomy, safety and beauty. And all these operate to the benefit of the consumers and to a better and transparent management of their fundamental rights and interests: right to meet essential living requirements, right to safety, right to be informed, to choose, right to education, right to a healthy environment. The latter is connected with the type of improvement that is defined as "quality of life ". Education for sustainable consumption is intended to enable consumers to take informed and responsible decisions and actions.

The development of equitable and sustainable consumption and production requires an interdisciplinary approach. This approach meets specific concepts of management, consumer's protection, science of commodities, eco-design and sustainable development. This approach also meets governmental measures that encourage research, initiate creative, critical, innovative thinking of the professionals from these disciplines and enhance cooperation between them.

This new direction represents creating new values and criteria in quality implying innovation and producing changes into our lifestyle and everyday attitude. So that, eco-design may play an important part in shaping a new changing world and, also, offering opportunities for new types of consumer behavior.

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